

Profile of *Dr. A.M. Mubarak*



Dr. Mubarak graduated from the University of Colombo with a first class honours and has a PhD from the University of Cambridge, U.K. He did his Post-doctoral research at the University of Maryland, College Park campus and Royal Institute of Technology, Stockholm. Dr. Mubarak, a Commonwealth Scholar, was Director/CEO of the Industrial Technology Institute (formerly CISIR) from 2002-2012.

Dr. Mubarak served in many Presidential and Ministerial Task Forces dealing with Science & Technology and had been an active member of Sri Lanka Delegation in several bilateral discussions with India on S&T cooperation. He currently serves as a member of the Ministerial committee for monitoring joint R&D Projects undertaken under Indo-Sri Lanka S&T cooperation.

He was a Member of the National Science and Technology Commission and has served on the Council of University of Colombo and several other Boards including Post Graduate Institute of Science (PGIS), Peradeniya, and National Engineering Research & Development Centre (NERDC). Currently he is on the Board of Rehabilitation of Persons, Properties and Industries Authority (REPPIA) and a member of the Governing Council of Sri Lanka Accreditation Board (SLAB).

Dr. Mubarak is the current President of the National Academy of Sciences, Sri Lanka and, a Past General President of Sri Lanka Association for the Advancement of Science and a Past President of Institute of Chemistry, Ceylon. Dr. Mubarak is non-executive and independent Chairman/Director of Union Chemicals Lanka PLC, and non-executive and independent Director of EB Creasy & Co PLC, Darley Butler PLC, Muller & Phipps (Ceylon) PLC, Laxapana Batteries PLC and Duramedical (Lanka) Ltd.

Convocation Address

It is a great honour and a privilege for me to be with you today at your convocation from one of the emerging Faculties in the country. Firstly, I would like to congratulate all of you students, your parents and families and also the members of the faculty who have given you such a strong foundation to excel. You all can feel proud of your achievements.

Dear Students, today you take a very decisive step to the outside world. You are en route to building your career, and your life. It is a happy occasion for both you and your family. It is also the time to reflect and think - to learn from the wisdom and advice of those who have been down this path before you. By getting an excellent education, you have built a strong and resilient foundation for the future.

BUT...please remember that your learning process does not come to an end today. Learning is a life long process. You will continue to learn at work, at your business and at home. There is a famous saying that the man who graduates today and stops learning tomorrow is uneducated the day after. Success may not come rapidly or without difficulty. But if you go all out to do what's right, and if you work harder and dream bigger, then I'm confident that you all will together make a significant contribution to the progress of this beautiful island nation of ours.

Apart from the sound base you have built in your subject areas it is also important to develop the soft skills that employers out there are looking for. What then are these soft skills? The top five personal qualities and skills employers seek are - Communication skills (both verbal and written), Analytical skills, Strong work ethics, Team play (works well with others) and, ability and courage to take the initiative. And employers want college graduates who can transition from the textbook world to the practical work seamlessly.

Dear Students, all the planning and preparation in the world can't prepare you for the many bends and dips that will come your way. Be prepared for the unexpected; make room for unlikely events. You will no doubt make mistakes but don't be discouraged or disheartened. Theodore Roosevelt said, "The only man who makes no mistakes is the man who never does anything". I am sure you don't want to be that man! Thomas Edison encountered several failures before inventing the first practical electric light bulb in 1879. Nobody saw the years of effort and the number of failures he had to face for that single life-defining moment. He knew that to enjoy success one must be willing to taste bitter failure as well.

Let me take a few minutes to take you through University education as it is in Sri Lanka today. Academic excellence is the cornerstone of any good university. And some of you may have aspirations of joining a University of Excellence, which calls for

the staff and students striving for the very best. Unfortunately many of our universities are essentially degree awarding bodies and pay little attention to research.

Cambridge University Emeritus Professor Peter Fellget describes a teaching only university as an absurd notion. He says knowledge is always incomplete, and if allowed to become static its value is lost. It needs to be continually extended and refreshed. Universities do this by research. If not, it is not just tertiary education that suffers, but every level; the downward diffusion of original ideas dries up, we become an underdeveloped country having to take our knowledge stale and second-hand from more enlightened nations that encourage and support their universities. In order to fulfill its duty to truth and knowledge a university must perform three functions. These are preservation of knowledge, adding to knowledge, and disseminating knowledge. They form an indivisible trinity; remove any one and all three are lost. Dear Students, words of wisdom from Emeritus Professor Peter Fellget.

During the next few minutes or so let me outline briefly the country's Science and Technology status and what is in store for you to help you climb the ladder of life.

In comparison to the increase in per capita income of many Asian countries, Sri Lanka's per capita GDP has increased by a mere 28 times since the Sixties; Malaysia saw an increase in

per capita GDP by 42 times, China by 99 times, Singapore by 124 times and South Korea by 175 times. Economic liberalization and reforms undertaken recently have fuelled the economies of neighbouring countries such as Bangladesh, Philippines and Vietnam, generating greater wealth for their people. Government has therefore targeted to increase our per capita income of US\$ 3624 to well above US \$ 6,000 within the next few years through various economic liberalization and reforms, and thereby placing our country in the ranks of upper middle-income nations.

One of the critical factors to reach this goal will be investment in science and technology. If we are to take the country forward from a basic factor driven economy to an innovation led economy, effective use of knowledge through the generation of technology is vital.

Sri Lanka currently has 237 R&D personnel per million populations whereas the world average is about 4 times Sri Lanka's figure. The developed country average is about 14 times higher. The Government has therefore set a target to increase the present level by 4 times and to bring it on par with the world average within the next decade. That means we have to increase the present number of 4600 R&D persons to about 18,000 in 10 years. Universities, in particular the Science and Engineering faculties, have to gear themselves to supplying this captive demand in the coming years. Similarly our investment in R&D, a

meager 0.13 % of the GDP should also be raised to the World average of 1% during this period.

But the question is, can we achieve this target? Frankly speaking it is a tall order. Putting up Universities, Science Cities and Hi-tech laboratories alone is not going to bring this sea change. Better remuneration, better perks for scientists and engineers will certainly help in this transformation, but we need a fundamental change in the attitude of the people, of society towards science. For the Government to fund scientific research and to improve science education, public enthusiasm, understanding and support are needed.

Another factor that need to be tackled is the issue of the younger generation moving away from science, a global phenomenon today. But unlike in developed nations the repercussions are more acute in Sri Lanka because of our fragile S&T base. There has to be a focused effort at increasing the numbers of young people studying science, technology, engineering and mathematics – the so called STEM subjects and raising the level of STEM literacy in the country.

Some of the key strategies proposed by the State to increase our GDP are to raise the hi-tech value added exports from the current 1.5% to 10% and to achieve a marked increase of import replacement in selected production through enhanced and focused R&D within the next few years. Several export

sectors such as agro-industries, fishery products, apparel, value added tea and rubber products, gems and jewellery, local minerals etc., have been targeted for hi-tech intervention.

When it comes to import replacement several sectors are being targeted at for technological intervention. Dairy and livestock industry is a unique economic activity that can be expanded rapidly in our country. One of the major issues in the dairy sector is the low productivity. While we produce on the average about 6 litres of milk/cow/day, Israel, a desert in the Middle-East, produces about 22 litres/cow/day. The reason behind the phenomenal success of Israel in milk production is science and technology. With focused R&D our milk yield can be raised many fold which will save US\$ 350 million in foreign exchange and generate new income sources for our rural entrepreneurs. Although we are surrounded by ocean we continue to import dried fish and canned fish spending annually around US\$ 150 million. Hence development in the fishery sector, both traditional and non-traditional fisheries, is a priority for the country. Annually we spend about US\$ 6000 million, 1/3 of the total cost of all imports, to import oil to meet our country's energy demand. If we are to reduce this import bill, we need to actively encourage R&D in renewable energy such as solar, wind, and biomass.

The destruction of natural forests, rivers and reservoirs, rain forests, animals and wildlife, has brought about severe

hardships across the entire world. The Government, recognizing a green environment as a corner stone of our development has proposed to expand the forestry coverage to 35 percent of land, targeting 250,000 hectares with conservation programs to preserve rain forests, reservoirs and the wildlife as an integral part.

All these interventions, whether it is to increase our exports or to replace our imports or to preserve our environment, require quality science and engineering graduates. The demand for them in the Universities, Government Research Institutions and the Private Sector is therefore expected to rise significantly in the coming years.

Let me now relate a story about connecting the dots from Steve Jobs biography. Steve Jobs son of a Syrian Immigrant is one of the great inventors of the 21st century. He entered Reed College, one of the prestigious colleges in the USA, but after just six months he dropped out of College. But he stayed around as a drop-in for another 18 months. He couldn't see the value in the college education, as he had no idea what he wanted to do with his life and no idea how college was going to help him figure it out. But looking back, Steve Jobs says, it was one of the best decisions he ever made. The minute he dropped out he could stop taking the required classes that didn't interest him, and begin going for classes that looked interesting. Reed College at that time offered perhaps the best calligraphy instruction in the

country. Throughout the campus every poster, every label on every drawer, was beautifully hand calligraphed. Steve Jobs decided to take a calligraphy class to learn how to do this. He learned about serif and san serif typefaces, about varying the amount of space between different letter combinations, about what makes a great typography. It was beautiful, historical, artistically subtle in a way that science can't capture, and he found that fascinating.

At the time he did not have even the smallest hope that it would have a practical application in his life. But ten years later, when his team was designing the first Macintosh computer, it all came back to him. And they designed it all into the Mac. It was the first computer with beautiful typography. If he had never dropped out, he would never have attended that calligraphy course in college, and the Mac would have never had multiple typefaces or proportionally spaced fonts. And since Windows just copied the Mac, it's likely that no personal computer would have. Of course while in College it was impossible for Steve Jobs to connect the dots looking forward. But it all fell into place looking backwards ten years later.

Steve Jobs' advise - you too have to trust that the dots will somehow connect in your future. You have to trust in something — your gut, destiny, life, karma, whatever. This approach has never let him down, says Steve Jobs and it has made all the difference to his life.

Another significant milestone in Steve's life was when he was sacked from Apple, the company he formed. Steve started Apple with his roommate, Wozniac in his parents' garage when he was 20, and in 10 years Apple had grown into a \$2 billion company with over 4000 employees. As Apple grew they hired John Sculley, President of Pepsi-Cola, who Steve Jobs thought was very talented to run the company with him, and for the first year or so things went well. But then they fell out and the Board of Directors sided with the new comer, John Sculley. So just one year after Apple had released their finest creation the Macintosh, Steve was kicked out at the age of 30. What had been the focus of his entire adult life was gone, and sure it was devastating.

Although he did not see it then, getting fired from Apple was the best thing that could have ever happened to Steve Jobs. The heaviness of being successful was replaced by the lightness of being a beginner again, less sure about everything. It freed him from the shackles of business. He was free to enter one of the most creative periods of his life.

He started a company named **NeXT** and another company named **Pixar**. Pixar went on to create the worlds first computer animated feature film, ***Toy Story***, and **Pixar** today is the most successful animation studio in the world. In a remarkable turn of events, Apple bought NeXT, Steve returned to Apple, and the technology they developed at NeXT is at the heart of Apple's current resurgence. The iPod, iPhone and iPad are all

Steve's brilliant creations– these devices have dramatically changed the way in which we communicate and the way in which we consume content. And in a space of 8 years he transformed Apple from the brink of bankruptcy into a stock market superstar and today Apple is one of the biggest publicly quoted firm - \$ 347 billion- in the world.

Sometimes life hits you in the head with a brick – that is exactly what happened to Steve Jobs. He did not lose faith. What kept him going was he loved what he did. His advise to all of us is You've got to find what you love. And that is as true for your work as it is for your lovers. Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work. And the only way to do great work is to love what you do.

Dear Students, a truly remarkable life story of Steve Jobs. His fascination with calligraphy during his college days enabled him to develop the famous Macintosh fonts 10 years later, which became the benchmark for all the computers. Even after he was sacked and publicly humiliated by Apple he continued to do what he loved- Computers- and came back to Apple as the CEO and made it one of the most admired company in the world today.

Let me conclude my talk by quoting President Maithripala Sirisena from one of his speeches. “In order to build a strong democratic and equitable nation it is necessary to

promote unity, friendship and coexistence among those who follow different religions and also among different communities, we need to ensure reconciliation and brotherhood that will eliminate mistrust, doubt and fear among people and move towards a just society that will ensure the rights of all Sri Lankan people”

Barak Obama, one of the most charismatic Presidents of the United States, once said - "I know that when I'm on my deathbed someday, I won't be thinking about any particular legislation I passed, or policy I promoted. I won't be thinking about the speech I gave, or the Nobel Prize I received, I'll be thinking about a walk I took with my daughters, a lazy afternoon with my wife, whether I did right by all of them."

Dear Students, what is important in the end is not that how much money you earned or how big a position you held or how many prizes/awards you received in your lifetime. What is important is to lead a healthy life giving priority to family values and communal and religious harmony and, become a respected citizen in the society.

And let me leave with you a famous quote from the spiritual leader Dalai Lama when you step outside of this hall and venture in to the real world.

Take care of your **Thoughts** because they become **Words**.

Take care of your **Words** because they will become **Actions**.

Take care of your **Actions** because they will become **Habits**.

Take care of your **Habits** because they will form your **Character**.

Take care of your **Character** because it will form your **Destiny**,

and your **Destiny** will be your **Life**.”

Thank you all,

Dr. A.M. Mubarak

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